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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,569	07/31/2006	Dirk Jan Broer	NLO40069	2999
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EXAMINER				
CHEN, LUCY P				
ART UNIT		PAPER NUMBER		
2871				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/597,569

Applicant(s)

BROER ET AL.

Examiner

LUCY P. CHIEN

Art Unit

2871

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Response to Arguments

Applicant's arguments filed 7/24/2009 have been fully considered but they are not persuasive.

Applicant's arguments that Harvey et al does not disclose a oriented polymerized liquid crystal of the layer having an anisotropic orientation such as to render the element moveable by non mechanical means between a first state having a first shape and a second state having a second shape different from the first is not persuasive.

Harvey discloses "the liquid crystal polymer films become less anisotropic due to the application of transverse sheer..." That means it is anisotropic, just less anisotropic. Also, Column 3, lines 10-15 disclose the liquid crystal orientate strongly in the die and the flowing polymer becomes anisotropic more so than ordinary coil polymers which tend to randomize. When voltage is applied to the anisotropic liquid crystal, the molecules are orientated in a specified direction, thus, wherein the oriented polymerized liquid crystal of said layer has an anisotropic orientation such as to render the element moveable by non-mechanical means (applying voltage) between a first state having a first shape (original shape, example: parallel to substrate) (when no voltage is applied) and a second state (when voltage is applied) having a second shape (shape after voltage is applied, example: perpendicular or tilted with respect to the substrate) different from the first.

Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1,2,4,6,8,10,11,14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Harvey et al (US 5843539).

Regarding Claim 1,10,16.

Harvey et al discloses (column 3, rows 33-50) a substrate and a layer of an oriented polymerized liquid crystal forming an element on said substrate, wherein said element is locally adhered to an adhering region (where curling does not occur, therefore the polymerizable liquid crystal has a monomer that has a polar end) of said substrate and is delaminated from said substrate at a non-adhering region (where curling of the liquid crystal polymer occurs, therefore the polymerizable liquid crystal has a monomer that has a apolar end) of said substrate, where said adhering region has a higher adhesiveness to the polymerized liquid crystal than said non-adhering region (where curling does not occur) and wherein the oriented polymerized liquid crystal of said layer has an anisotropic orientation such as to render the element moveable by non-mechanical means between a first state having a first shape and a second state having a second shape different from the first.

Regarding Claim 2.

Harvey et al discloses wherein said non-mechanical means include a variation in temperature (column 2, rows 59-67).

Regarding Claim 4, 11.

Harvey et al disclose wherein the substrate includes an orientation layer a surface of which comprises at least said non-adhering region (abstract).

Regarding Claim 6

Harvey et al disclose at the adhering region, the polymerized liquid crystal is covalently bonded (laminated) to the substrate (abstract).

Regarding Claim 8.

Harvey et al discloses (column 3, rows 25-30) polymerized liquid crystal has a twisted nematic orientation.

Regarding Claim 14.

Harvey et al discloses wherein said step of polymerizing said polymerizable liquid crystal includes the step of bringing, on the side facing away from the substrate, the polymerizable liquid crystal into contact with an orientation layer to provide the polymerizable liquid crystal at that side with an orientation which is different from the orientation induced in the polymerizable liquid crystal adjacent the substrate (abstract).

Regarding Claim 15.

Harvey et al discloses wherein the orientation layer provided on the side facing away from the substrate has a surface functionalized with surfactants providing the

polymerizable liquid crystal adjacent said orientation layer with a homeotropic orientation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al (US 5843539) in view of Eich et al (US 4896292).

Regarding Claim 3,7.

Harvey et al discloses everything as disclosed above.

Harvey et al does not disclose wherein said non-mechanical means include exposure to electromagnetic radiation of different wavelengths.

Eich et al discloses wherein said non-mechanical means include exposure to electromagnetic radiation of different wavelengths (column 4, rows 49-67). Also, an electrode to orientate the liquid crystal molecules.

It would have been obvious to one of ordinary skill in the art to modify Harvey et al to include Eich et al's non mechanical mean including exposure to electromagnetic radiation of different wavelengths and electrodes (column 4, rows 49-67) motivated by the desire to orientate the polymeric liquid crystals (column 9, rows 54-60).

Claim 5,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al (US 5843539) in view of Voldman et al (US 7425253).

Regarding Claim 5,12

Harvey et al discloses everything as disclosed above.

Harvey et al does not discloses wherein said non-adhering region is formed of an apolar polyimide surface and said adhering region is formed of a polar polyimide surface obtainable by oxidizing an apolar polyimide surface.

Voldman et al discloses non-adhering region is formed of an apolar polyimide surface (octadecyl) which resist protein adhesion.

It would have been obvious to one of ordinary skill in the art to modify Harvey et al to include Voldman's apolar polyimide such as octadecyl motivated by the desire to resist protein adhesion.

Allowable Subject Matter

Claim 17 is allowed.

Regarding Claim 17.

The prior art does not disclose the method steps of providing a substrate that has a patterned surface includes providing an apolar polyimide orientation layer at said adhering and non-adhering region and selectively oxidizing said polyimide orientation layer at said adhering region to render the adhering region polar and delaminating the layer of oriented polymerized liquid crystal mixture from the substrate at the non adhering region.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUCY P. CHIEN whose telephone number is (571)272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien
Examiner
Art Unit 2871

/Dung Nguyen/
Primary Examiner, Art Unit 2871